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Java Foundations

1-3

Setting Up Java

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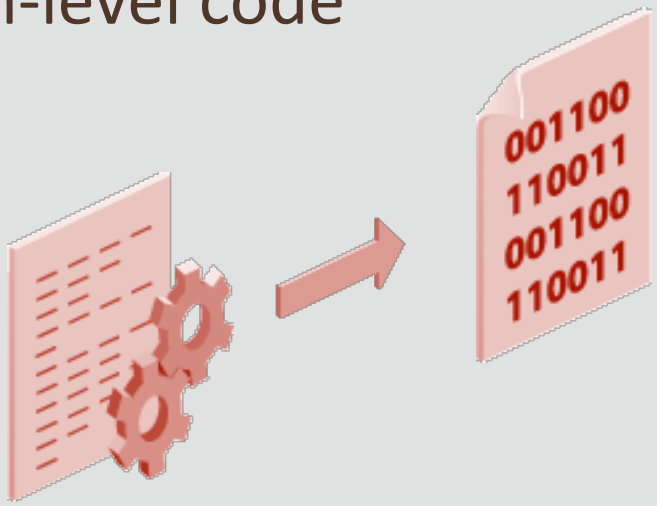
Objectives

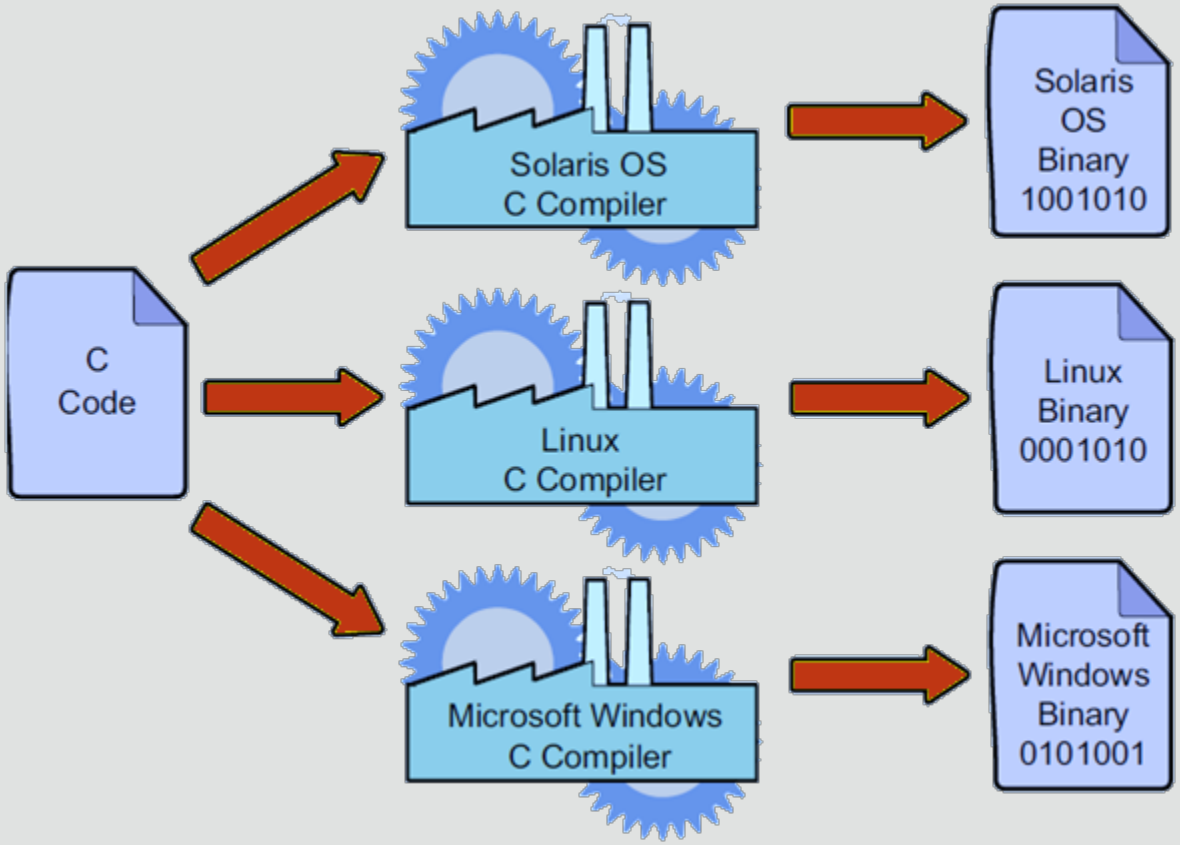
- This lesson covers the following objectives:
  - Understand the difference between the JDK and JRE
  - Understand the difference between .java and .class files
  - Describe the purpose of an integrated development environment (IDE)
  - Add an existing .java file into a Java project

Purpose of a Computer Program

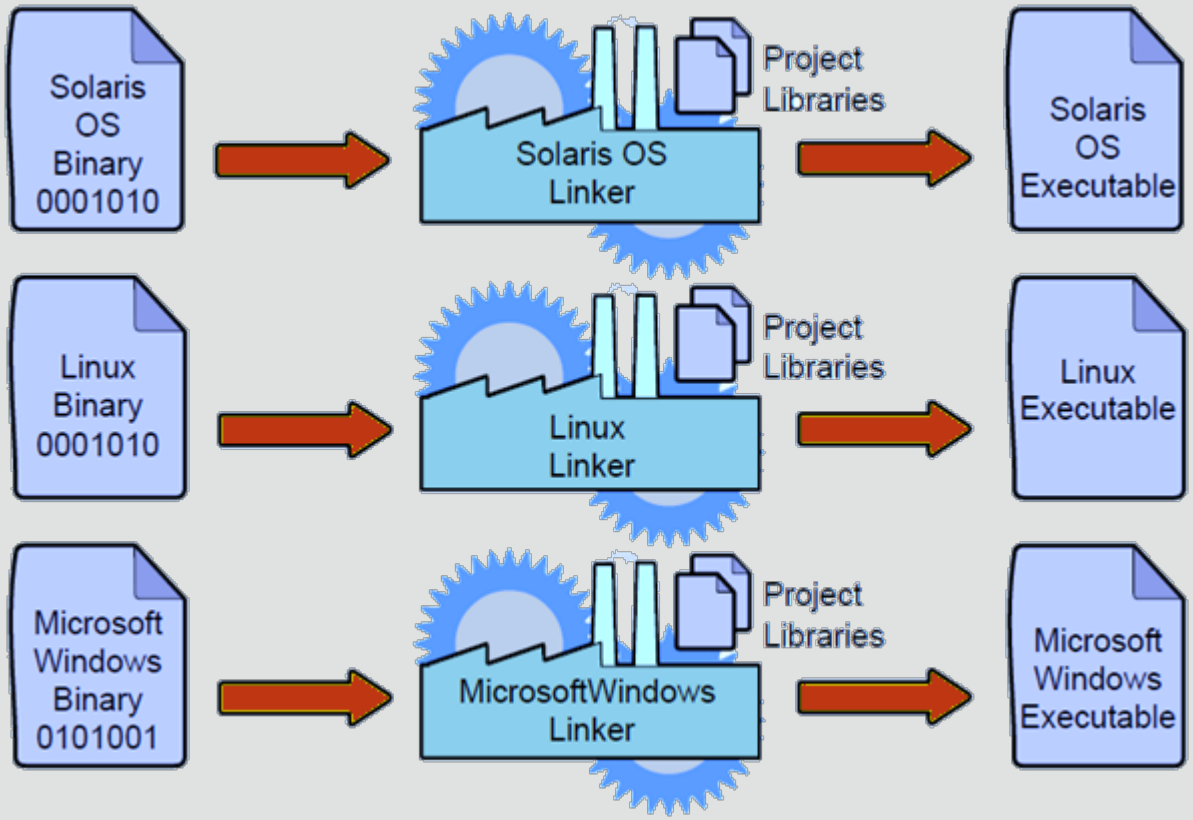
- A computer program is a set of instructions that run on a computer or other digital device
- At the machine level, the program consists of binary instructions (1s and 0s)
  - Machine code
- Most programs are written in high-level code (readable)
  - Must be translated to machine code



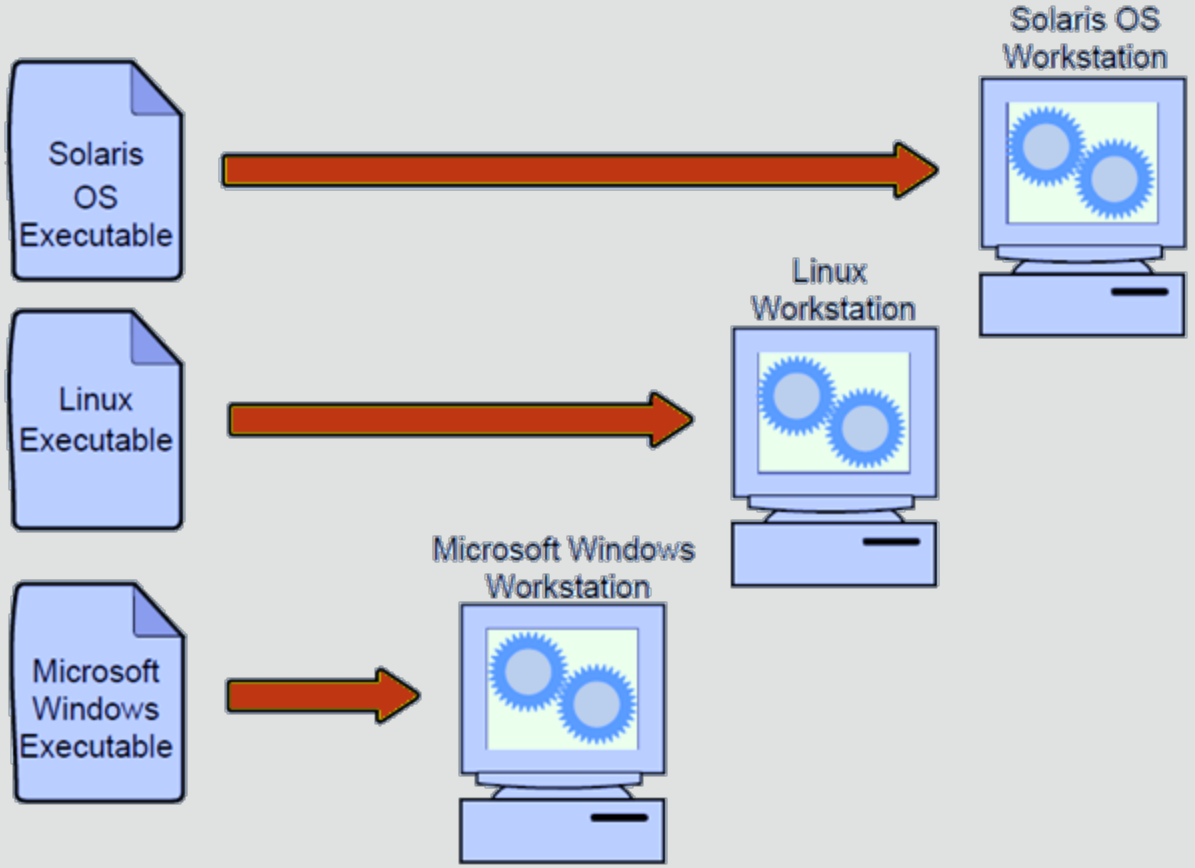
Translating High-Level Code to Machine Code



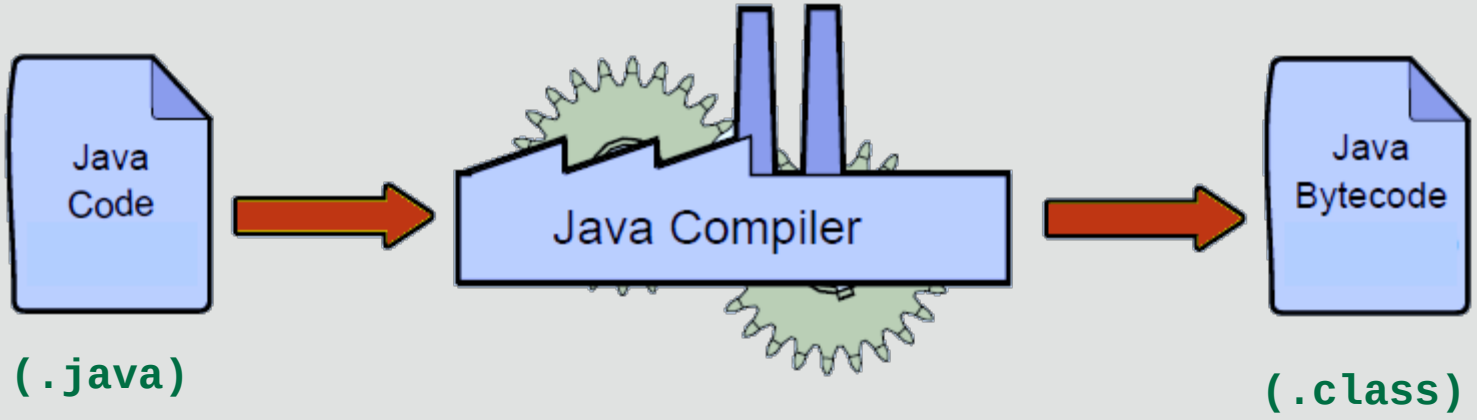
Linked to Platform-Specific Libraries



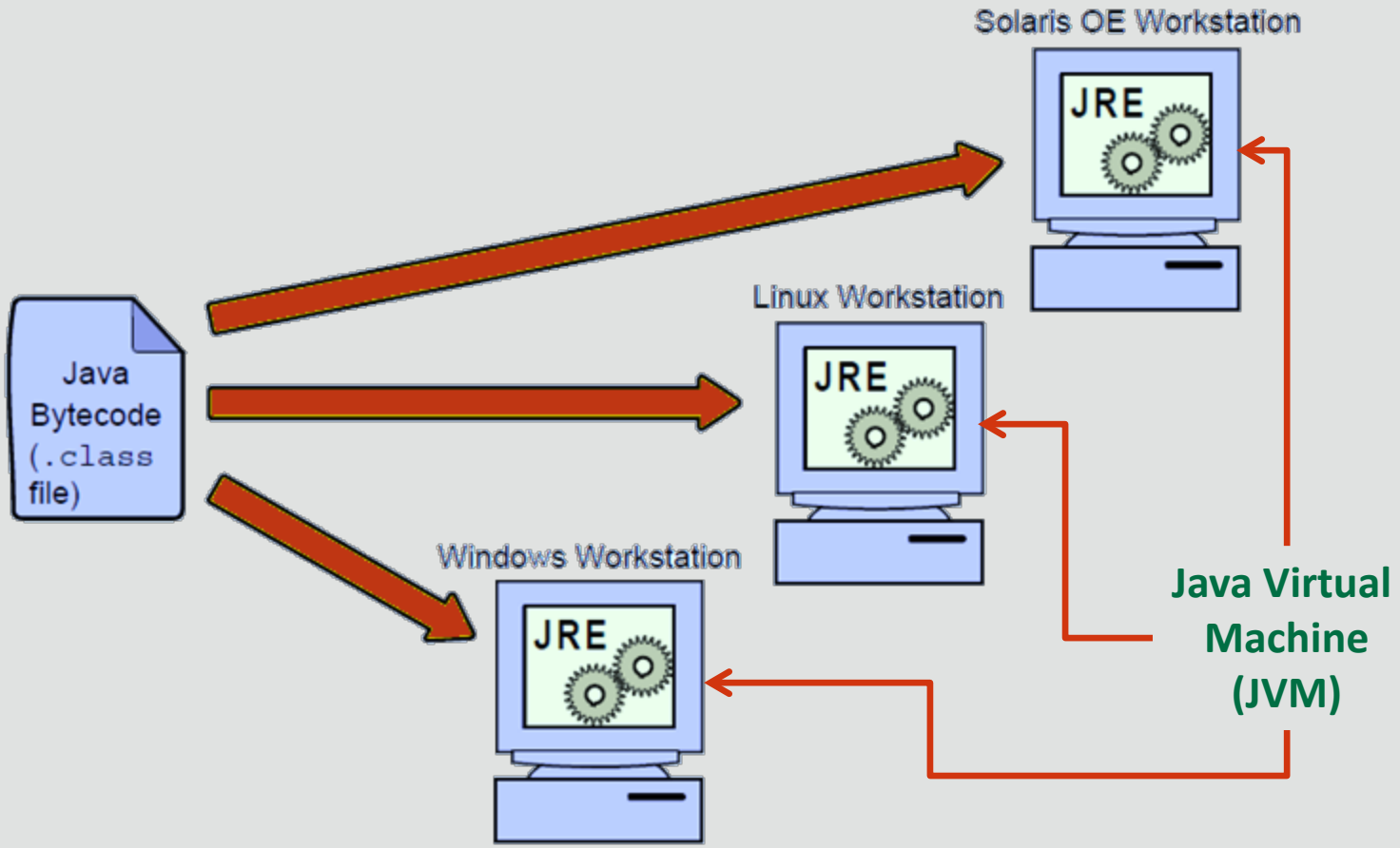
Platform-Dependent Programs



Java Is Platform-Independent



Java Programs Run in a JVM



Java Runtime Environment (JRE)

- Includes:
  - The Java Virtual Machine (JVM)
  - Java class libraries

JRE

- Purpose:
  - Read bytecode (.class)
  - Run the same bytecode anywhere with a JVM

Java Development Kit (JDK)

- Includes:
  - JRE
  - Java Compiler
  - Additional tools

JRE

JDK

- Purpose:
  - Compile bytecode (.java → .class)

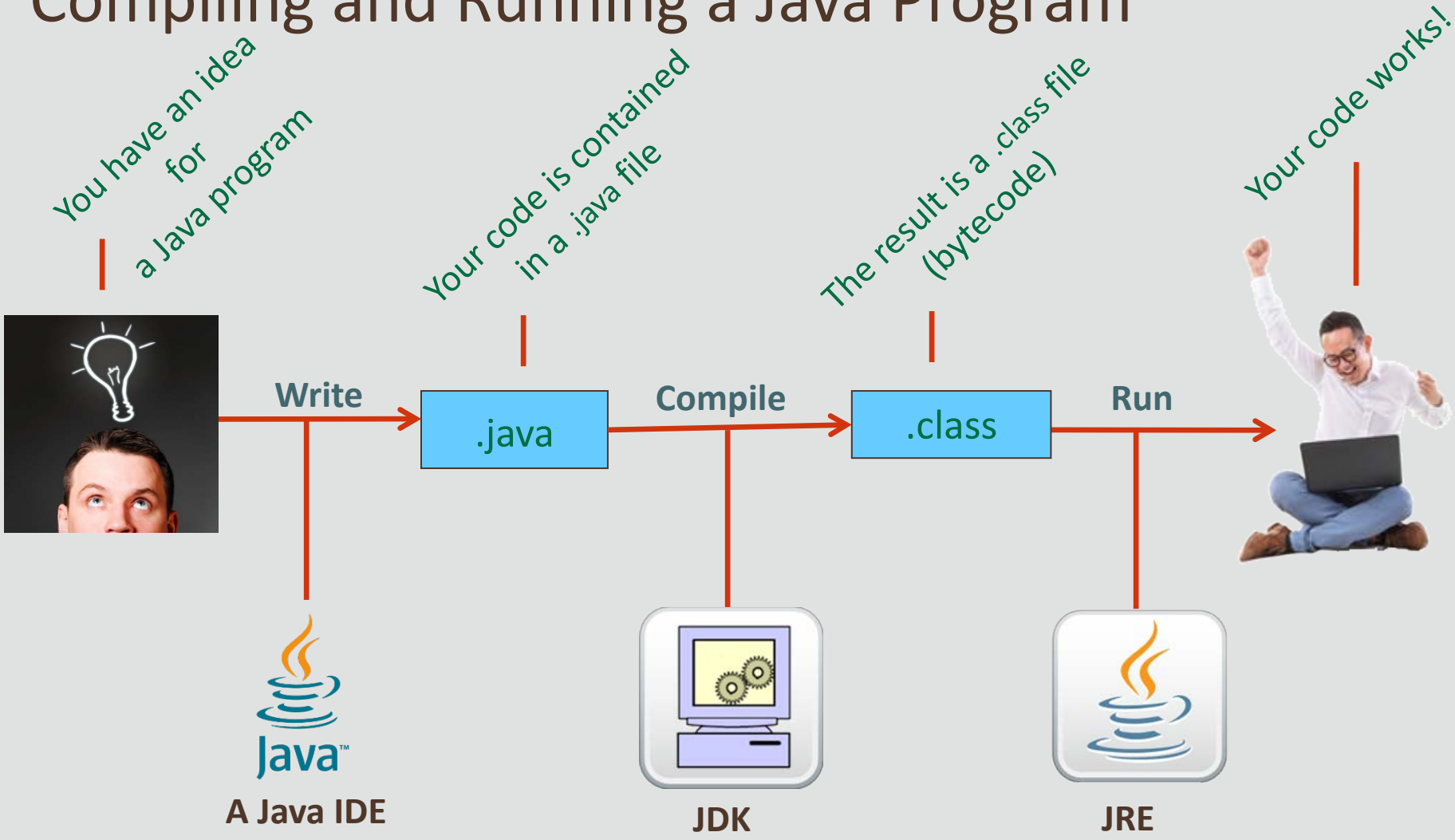
Integrated Development Environment (IDE)

- Purpose:
  - Provide a sophisticated text editor
  - Offer assistance debugging code
  - Manage projects
  - Write source code (.java)
- Examples:
  - NetBeans
  - Greenfoot and BlueJ
  - Alice
  - Eclipse





Compiling and Running a Java Program



Working with existing code files

- Throughout this course, sample code and project starter code are supplied as .java files
- Complete the practice for this lesson as it demonstrates how to add existing .java files to a project in commonly used Java IDEs. (If you are using a different Java IDE refer to the IDE's documentation for instructions on how to do this)

Summary

- A computer program is written in a high-level language, but must be compiled into machine code
- Most programming languages compile a separate executable for each platform
- Java is platform-independent

A Java IDE is used to **write** source code (`.java`)

The JDK **compiles** bytecode (`.java` → `.class`)

Bytecode **runs** in a JVM, which is part of the JRE

Summary

- In this lesson, you should have learned how to:
  - Understand the difference between the JDK and JRE
  - Understand the difference between .java and .class files
  - Describe the purpose of an integrated development environment (IDE)
  - Add an existing .java file into a Java project

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